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DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
EXPERIMENTAL FARMS

DIVISION OF CEREALS

SUMMARY OF RESULTS
CEREALS

1914

PREPARED BY
CHAS. E. SAUNDERS, Ph. D.
Dominion Cerealist

AND THE
SUPERINTENDENTS OF THE BRANCH EXPERIMENTAL FARMS
AND STATIONS

BULLETIN No. 81

by direction of Hon. MARTIN BURRELL, Minister of Agriculture, Ottawa, Ont.

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DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE
EXPERIMENTAL FARMS

DIVISION OF CEREALS

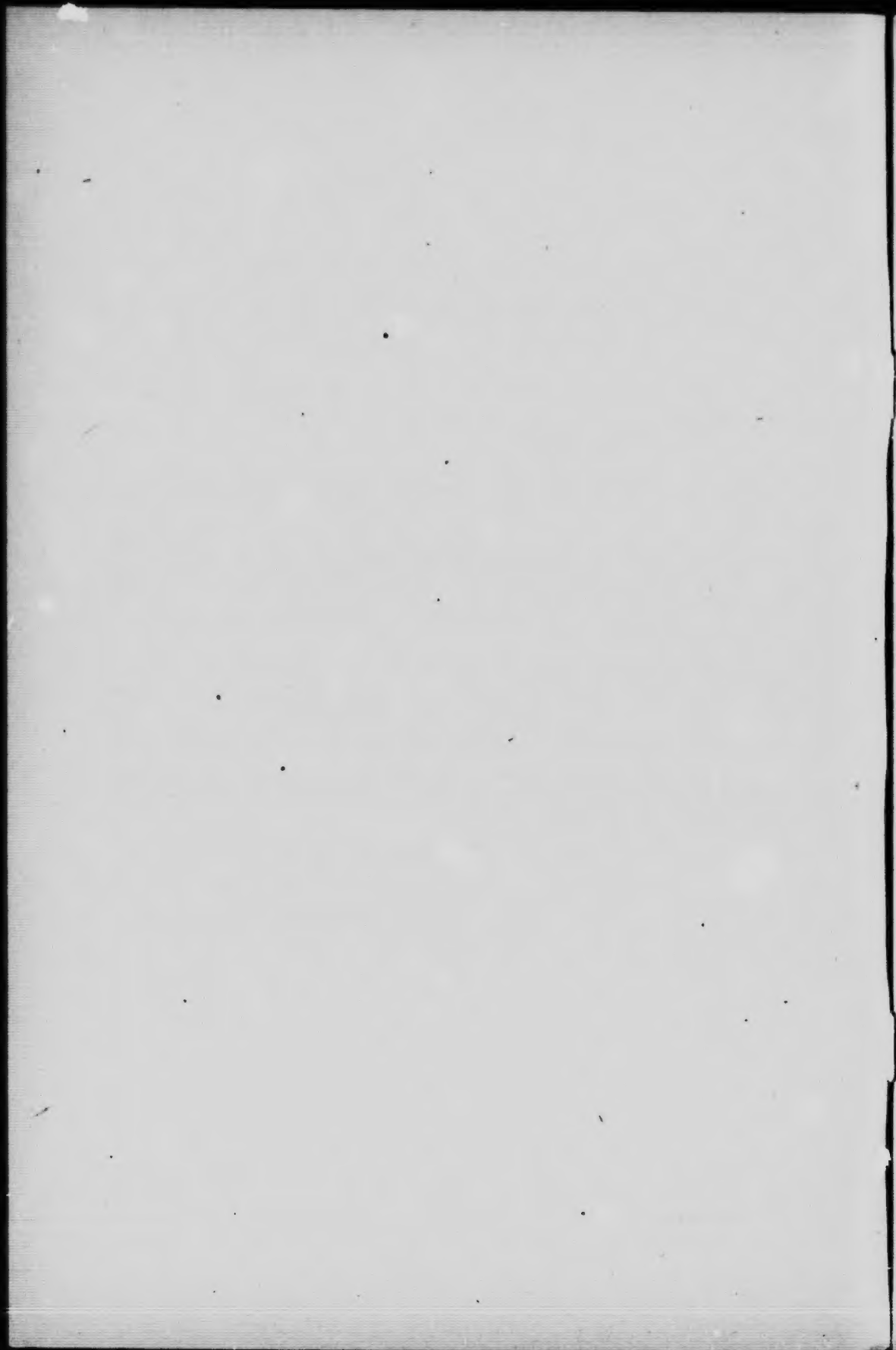
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OTTAWA, January 4, 1915.

The Honourable,
The Minister of Agriculture,
Ottawa.

SIR,—I have the honour to submit herewith Bulletin No. 81 of the regular series, entitled, "Division of Cereals: Summary of Results, 1914."

The bulletins issued last year giving a summary of the results as secured from crop production, field experimental work and horticulture in 1913, seemed to be warmly welcomed by our Canadian farmers. It has accordingly been deemed advisable to now issue similar bulletins dealing with the crops of 1914. The details of the work will, of course, appear in the annual report which will be prepared at the end of the fiscal year, March 31, 1915.

The plan followed in compiling these crop bulletins is similar to that now being pursued in the preparation of the annual report. The introductory matter and the account of the experiments on the Central Farm are prepared by the Dominion officer having charge of this branch of the work, in this case the Dominion Cerealists. The data from the various branch Farms and Stations are supplied by the officers in charge.

It is hoped that the Canadian farmer may be materially aided by these summaries of results and the recommendations based thereon. These will, it is hoped, reach him in time for him to profit by them in 1915.

I have the honour to be, sir,
Your obedient servant,

J. H. GRISDALE,
Director, Dominion Experimental Farms

TABLE OF CONTENTS

	PAGE
Letter of Transmittal.	3
Varieties of Grain, Notes on.	5
Sale of Seed Grain.	6
Recommended Varieties of Grain.	6
Central Farm, Ottawa, Ont.	8
Charlottetown, P.E.I.	10
Fredericton, N.B.	12
Nappan, N.S.	13
Kentville, N.S.	14
Ste. Anne de la Pocatière, Que.	16
Cap Rouge, Que.	16
Brandon, Man.	18
Indian Head, Sask.	19
Rosthern, Sask.	22
Scott, Sask.	24
Lethbridge, Alta.	25
Lacombe, Alta.	27
Substations:	
Grouard, Alberta.	28
Fort Vermilion, Alberta.	28
Invermere, B.C.	29
Agassiz, B.C.	29
Sidney, B.C.	31

DIVISION OF CEREALS.

SUMMARY OF RESULTS, 1914.

BY

CHAS. E. SAUNDERS, B.A., PH.D., DOMINION CEREALIST.

AND THE

SUPERINTENDENTS OF THE BRANCH EXPERIMENTAL FARMS AND STATIONS.

NOTES ON IMPORTANT VARIETIES OF GRAIN.

PIONEER WHEAT.

The need of a very early ripening variety of wheat capable of producing straw of fair length when grown in rather dry districts has led to the introduction of Pioneer. While this variety may not prove entirely satisfactory in all cases, it can be confidently recommended as the only wheat, available to the public, which has the qualities of good appearance, exceptional hardness and high weight per bushel, excellent baking strength of the flour and good yield, combined with exceptional earliness and fair ability to resist drought and to produce straw of moderate length even under dry conditions. It is recommended for trial in localities where Marquis wheat cannot be depended on to ripen before frost, and where the rainfall is not sufficient to ensure success with Prelude.

Pioneer is a selection from the progeny of a cross made in 1903 by the Dominion Cerealists between Riga and Preston wheats. In earliness the new variety stands between the two parents, or it may be described as ripening about midway between Prelude and Marquis. Pioneer is bearded and has smooth chaff. The straw is of fair length, rather long for so early a wheat, and though not of very great strength it appears to be quite strong enough for the districts for which it is recommended. Pioneer should not be sown in any locality where the tendency is towards long straw. Under such conditions the straw of this variety would probably be too long and weak. Furthermore, Pioneer is liable to rust and other diseases in moderately moist climates.

The kernels of Pioneer are red and of exceptional hardness and high weight per bushel. The flour obtained from it is of excellent colour and very high baking strength.

ABUNDANCE OATS.

In past years Abundance oats have been recommended as about equal in value to the old standard sort, Banner. Without endorsing any of the remarkable claims that have been made in favour of Abundance, it must be admitted that it has shown itself a very good variety. But after careful tests for several years on a number of farms, enough evidence has been accumulated to show that in spite of its excellent qualities this oat is not superior in any point to Banner, and is indeed usually a little inferior to it. The so-called "Regenerated Abundance" has not shown any material difference from the older stock. In my opinion, Abundance has not been sufficiently tested

and may safely be dropped in favour of its great rival, Banner. A new variety which cannot show at least one point of decided excellence over the best of the old sorts has no just claim for recognition.

SALE OF SEED GRAIN.

The Dominion Cerealists will be glad to furnish information, as far as possible, to intending purchasers of seed grain, as to the nearest source of supply for good seed. Seedsmen and farmers in any part of Canada having seed grain for sale are advised to send their names, with a statement as to quantities, etc., and samples of the seed offered, to the Dominion Cerealists.

Most of the branch Experimental Farms have seed grain for sale, usually in limited quantity. There is also, frequently, a small surplus of seed at Ottawa after the free distribution has been finished, which is available for sale.

RECOMMENDED VARIETIES OF GRAIN

MARITIME PROVINCES.

Spring wheat.—Red Fife and White Fife are old, standard sorts, which are in the highest class for bread-making. They are, however, surpassed in earliness and yield, as a rule, by some of the new varieties.

Early Red Fife and Marquis are new, early-maturing wheats worthy of trial. They are in the same class as Red Fife for bread-making.

Huron is an early, productive, vigorous sort. It is bearded.

White Russian also gives good yields, but is not of early-ripening habit. The two varieties last mentioned (especially White Russian) are of lower strength for bread-making than the others.

Oats.—Among the best standard sorts may be mentioned Banner and Ligowo. These are white oats. Ligowo usually ripens before Banner, but is somewhat less productive. The black varieties usually give smaller yields than Banner.

If a very early oat is desired, Daubeney or Eighty Day may prove satisfactory.

Barley.—Manchurian, a selection from Mensury, and Ontario Agricultural College No. 21, a selection from Mandscheuri, are two strains of six-row barley which have recently been introduced and are superseding the other sorts from which they are derived.

Among the two-row varieties, Duckbill, Goldthorpe, Canadian Thorpe and Swedish Chevalier may be mentioned as good standard sorts.

Peas.—Arthur is particularly recommended for earliness and yield.

Other good sorts are Golden Vine (small), White Marrowfat (large) and Prussian Blue.

QUEBEC AND ONTARIO.

Spring wheat.—Red Fife and White Fife are good standard sorts but rather late in ripening for northern localities.

Huron, Marquis and Early Red Fife are earlier in ripening.

All the varieties mentioned are good for bread-making, but Huron is not equal in this respect to the others. It is, however, particularly vigorous and productive, and is highly recommended.

In extreme northern districts, Prelude will be found valuable if the soil is fairly rich and the rainfall sufficient.

In southern Ontario, the very late variety, Blue Stem, gives good results. It is rather more resistant to drought than most sorts. Goose wheat is useful in extremely dry localities, though the price of this variety is often quite low, as it is not used for

bread-making. Kubanka, closely resembling Goose, makes excellent bread, but it is so different from ordinary wheats that millers object to grinding it. Goose is usually more productive than Kubanka.

Oats.—Banner and Ligowo are two of the best sorts. Ligowo is slightly earlier in ripening, but less productive. Daubeney and Eighty Day may be used where extreme earliness is desired.

Barley.—Manchurian and Ontario Agricultural College No. 21 are recommended among the six-row sorts.

Duckbill, Canadian Thorpe and the best strains of Chevalier are recommended among the two-row sorts.

No varieties of beardless or hulless barley can be recommended. Success (beardless) is of very early-ripening habit.

Peas.—Among yellow peas, Arthur is most highly recommended for earliness and productiveness. Golden Vine, Chancellor and White Marrowfat are also good sorts.

Prussian Blue, Wisconsin Blue and English Grey are good coloured peas.

MANITOBA.

Spring wheat.—Red Fife and Marquis for most localities. Marquis is especially desirable in districts where early frosts are feared; but its rather short straw is a disadvantage in dry districts. In such localities, it should only be sown on summer-fallowed land.

Prelude is worthy of a trial wherever Marquis produces rather too long straw and ripens too late.

Oats.—Banner and Ligowo are among the best. Daubeney Selected or Eighty Day may be used if it is essential to have an extremely early sort.

Barley.—Manchurian and Ontario Agricultural College No. 21 are recommended.

If a two-row type is desired for any special purpose, Canadian Thorpe, Duckbill or Early Chevalier should be tried.

Peas.—Arthur, Chancellor and Golden Vine are among the best yellow sorts.

English Grey and Prussian Blue are among the best coloured varieties.

SASKATCHEWAN.

Spring wheat.—Marquis, Red Fife, Early Red Fife, Prelude and Pioneer should be considered. Marquis is the most productive. If Marquis proves too short in the straw, Red Fife or Early Red Fife should be grown. If Marquis grows too rank and is too late in ripening, Prelude will be found very valuable. For dry districts where earliness in ripening is very important Pioneer is recommended.

Oats, barley, peas.—See Manitoba list.

ALBERTA.

Winter Wheat.—Kharkov and Turkey Red. These two sorts are essentially the same in most respects, but Kharkov has shown greater productiveness in some tests. In districts where winter wheat has not been fully tested, farmers are advised to sow only very small areas of it at first.

Spring Wheat.—Red Fife is perhaps the best sort for some of the dry areas towards the south, but wherever there is sufficient rainfall, Marquis should be tried. If early-maturing varieties with longer straw than Marquis are essential, Huron and Early Red Fife are suggested for test.

For all districts where the tendency is towards the production of excessively long straw and where a very early-ripening wheat is required. Prelude is unquestionably the best variety known.

For dry districts where exceptional earliness is needed Pioneer is the most likely variety to give satisfaction.

Oats.—Banner and Ligowo are recommended where rather long straw is required. Ligowo is rather early in ripening.

Daubeney and Eighty Day (or the common commercial sort Orloff) should be tried wherever extreme earliness is required, provided the climate is not very dry. These oats produce short straw and rather small kernels.

Barley.—Manchurian and Ontario Agricultural College No. 21 are recommended six-row sorts.

If two-row varieties are desired, Canadian Thorpe, Duckbill and Early Chevalier may be tested.

Peas.—If it is desired to secure ripe grain, Arthur is probably the best sort on account of its early-ripening habit.

For growing with oats, to be cut green, Prussian Blue, Golden Vine, Chancellor and English Grey are advised.

BRITISH COLUMBIA.

Owing to the varied climates of this province, only a few general suggestions as to varieties can be made.

Winter wheat.—Kharkov or Turkey Red (especially where the winter is dry), Egyptian Amber, Dawson's Golden Chaff. The latter is intended for pastry or biscuit flour.

Spring wheat.—Red Fife, Marquis and Huron are among the best.

Oats.—Banner, Ligowo. For very short seasons with fair rainfall, Daubeney and Eighty Day.

Barley.—Manchurian, Odessa, and Ontario Agricultural College No. 21 are recommended six-row sorts.

Swedish Chevalier, Early Chevalier and Canadian Thorpe are good two-row sorts.

Peas.—Arthur Selected is recommended wherever an early-ripening sort is needed. Chancellor, Golden Vine and Prussian Blue are among the best varieties.

CENTRAL EXPERIMENTAL FARM, OTTAWA, SEASON OF 1914.

The season of 1914 was rather unfavourable for the best results with cereals. The spring and early summer were very dry, there being scarcely any important showers from the end of April until nearly the end of June. This prevented a uniform germination of seed grain, while smaller seeds, such as flax, suffered most severely. Light showers accompanied with intense heat characterized the remainder of June and the larger part of July. Although the harmful effects of the beginning of the season were somewhat alleviated, the extreme heat of July injuriously hastened the ripening of the very early maturing grains before they had attained full development. Cooler weather with light showers prevailed throughout the remainder of July and August. This permitted the medium and late varieties under test to mature a fair yield of grain of good quality. Harvesting was accomplished with ease and rapidity. Although at no time during the summer was the rainfall ample, yet the even distribution of the showers after the middle of June resulted in larger yields of all classes of grain than would have been anticipated from appearances in the early part of the season.

SPRING WHEAT.

One hundred and forty-five varieties and selected strains of spring wheat were tested in the regular one-sixtieth acre trial plots at Ottawa. The wheat was sown from the 5th to the 9th of May, the seed being used at the rate of about one and one-half bushels per acre. Cutting commenced on July 25, Prelude being, as usual, the first variety harvested.

Considering the very dry character of the season as a whole the yields of spring wheat obtained were good, reaching as high as 43 bushels per acre in the case of two of the new cross-bred varieties not yet named. The highest yield from any named variety was obtained from a new, beardless selection of Yellow Cross. This stood 25th on the list and gave 35½ bushels. The next named sorts were White Russian and Pringle's Champlain, both of which gave 33½ bushels. Prelude gave 27 bushels and ripened 22 days before White Russian. Bourgoyne's Fife, a new English variety, stood 140th on the list, with a yield of 16½ bushels per acre. It ripened 28 days later than Prelude.

EMMER AND SPELT.

Several varieties of Emmer and Spelt have been tested for a series of years. Common Emmer (which often goes by the incorrect name of "Speltz"), Red Emmer and Smooth Spelt appear to be the most productive sorts. On the whole, these grains have not shown any advantages, for this district, over the best sorts of wheat, oats and barley. The cultivation of Emmer or Spelt, under ordinary conditions of farming, is not advised.

OATS.

Sixty-seven varieties of oats were sown this season in the regular test plots. The dates of sowing were from the 13th to the 15th of May. The seed was used at the rate of about two bushels per acre, except when the oats were unusually large, when about one-fourth or one-half as much seed again was used.

The largest yield this season, from any named variety, was 75 bushels 30 pounds per acre from Victory. The first variety to be cut was Eighty Day, which ripened on July 28, only 75 days from the date of sowing. The excessive drought was particularly unfavourable to early varieties. Eighty Day only gave a little over 43 bushels per acre.

BARLEY.

Owing to shortage of land, the regular variety tests of barley could not be made this season.

SPRING RYE.

Two strains of spring rye were under test. They were sown on May 19 and ripened August 19. The higher yield, 35 bushels and 50 pounds was given by Ottawa Select, which has also given the higher yield, taking the average of the past seven years.

FIELD PEAS.

Forty-one plots of field peas were sown on the 12th and 13th of May. The seed was used at the rate of about two bushels per acre in the case of small peas and three bushels when the peas were large. The extremely dry weather caused considerable irregularity in the yields. Arthur Selected, which is one of the best sorts, did not give good returns this year, as the plot was in an unfortunate position. Prussian Blue gave the best yield, of all the varieties available to the public. Prussian Blue and Arthur showed the highest weight per bushel, 66 pounds.

BEANS.

Five varieties of beans, intended for use in the form of the ripe seed, were sown on May 26. The highest yield obtained was from Norwegian Brown Selected. This was ripe on September 1 and produced seed at the rate of 51 bushels per acre. The dark colour of these beans would no doubt be a very serious disadvantage in commerce. The white variety which gave the best yield this season, California Pea, ripened on September 5 and produced 32½ bushels per acre.

FLAX.

Many interesting selected strains of flax are being tested. The experiments have not yet been carried on long enough to enable one to draw definite conclusions as to which are the best sorts. One of the new selections, called Novelty, stands at the head of the list this year, with a yield at the rate of a little over 16 bushels per acre. The season was very unfavourable for flax, as the germination of the seed was seriously retarded by the drought.

EXPERIMENTAL STATION, CHARLOTTETOWN, PRINCE EDWARD ISLAND.

J. A. Clarke, B.S.A., Superintendent.

SEASONAL NOTES.

The season of 1914 was most favourable for the growth of cereals in Prince Edward Island. The ground was well covered with snow during most of the previous winter. The weather was remarkably mild throughout the most of March. The first week of April was cold and the weather remained backward during the whole month, and the first two weeks of May, there being quite a heavy snowfall on May 11. The last half of May was very favourable for work and for plant growth. Seeding commenced on May 18. Owing to frequent showers, cold nights, and the absence of any really hot days, vegetation remained very backward during June. Hoar-frost occurred the night of July 1. This was followed by very favourable weather for the growing crops during July and August. The grain though very late ripened well the last of August and the first week in September. Daubeney oats were cut August 20, but cutting did not become general until the close of the month. September was the harvest month and the weather was all that could be desired.

The season has been the most favourable since 1910 for cereals and the crops in general have quite equalled that banner year.

Certain areas included in the three-year rotation commenced in 1913 on the land available for uniform test plots of cereals were found to be unsatisfactory and were cut out. These will be used for multiplying plots and for decoying birds away from the test areas. Owing to this rearrangement it became necessary to adopt a four-year rotation as follows: roots, wheat and barley plots, clover, oat plots, in order to get room for the cereals that we thought should be tested. Two-thirds of the area devoted to oat plots were badly infested with couch grass which caused low returns from some of the most promising sorts. The system of duplicate plots was continued.

UNIFORM TEST PLOTS OF CEREALS.

The spring wheat was sown May 20, the oats May 22, and the barley on May 30, quite a little later than average sowings. Paths and plots were sown with grasses and clovers. The plots were rogued carefully and the loose smut of wheat removed by hand, every precaution being taken to keep the different sorts of grain up to the highest standard of purity. Formalin was used as a fungicide for bunt (stinking smut) and the loose smuts of oats and barley with satisfactory results. The grain grew very strong. There was considerable rust observed and many of the varieties of oats lodged badly.

Great numbers of plant lice were observed. On August 13 it became necessary to check them on the field peas with kerosene emulsion. This remedy proved very effective.

SPRING WHEAT.

Chelsea (one of the softer sorts of wheat) was first with an average of 53½ bushels per acre. The next five in order were Early Red Fife, Huron, Stanley, Marquis and Red Fife. The average yield of these six varieties was 41 bushels and 13 pounds per acre.

OATS.

Victory (a Swedish oat) led this season with an average yield of over 119 bushels per acre. The next four sorts in order were O.A.C. No. 72, Lincoln, Gold Rain, and Ligowo. The average yield of these five sorts was 116 bushels and 29 pounds per acre. Owing to unfavourable conditions previously mentioned the other ten sorts have a much lower average. The average of the 15 sorts grown at this station in duplicate during the season was 79 bushels and 19 pounds.

BARLEY.

The plots of barley were on much more uniform land than the other cereals and the test is relatively of more value. The Old Island two-row (English Chevalier) that was favourably mentioned last year again led the list of all sorts with an average yield of over 83 bushels per acre. The next five varieties of two-row barley in order were Gold, Hannchen, Swedish Chevalier, Canadian Thorpe and Invincible, being the same list as last year with a few changes in relative positions. The average yield of these six varieties was 75 bushels and 29½ pounds per acre. The first six sorts of six-row barley in order of yield were Trooper, Stella, Albert, O.A. C. No. 21, Nugent and Manchurian. The average yield of these was 73 bushels and 36 pounds.

PEAS.

Solo, the variety that led last year, was again in the lead. The next in order were Arthur and Golden Vine. The average yield of the three sorts was 25 bushels and 27½ pounds per acre.

FIELD PLOTS OF CEREALS.

Multiplying plots of the best sorts of cereals were grown on the Farm locations. The demand for registered seed of the best quality is increasing and provisions has been made so that there is a limited supply of a few of the best sorts available to purchasers who wish to grow pure seed and who will agree to keep it pure and report to this Station the results at the close of the season.

CO-OPERATIVE TEST PLOTS OF THREE VARIETIES OF OATS.

The co-operative test of oats begun in duplicate in 1912 was continued. The varieties used were Banner, Old Island Black and Ligowo. The seed was supplied by the station and the grain was threshed, graded and weighed here. The results given are average of 26 plots of each variety. Plots have been grown in eight localities.

AVERAGE YIELD PER ACRE FOR THREE YEARS.

Banner.		Old Island Black.		Ligowo.	
Bus.	Lbs.	Bus.	Lbs.	Bus.	Lbs.
62	21	55		52	24

From the above data it will be seen that Banner has been more productive in Kings and Queens counties than the other two sorts, which represent other types. It has produced 7 bushels and 10 pounds more grain per acre than Old Island Black and 9 bushels and 31 pounds more grain per acre than Ligowo during the three years' test.

Banner has gradually won out in popularity over the Old Island Black oats in this province, even though the Old Island Black has still the advantage of 2 cents per bushel in most "Maritime" markets over any white oats.

EXPERIMENTAL STATION, FREDERICTON, N.B.**W. W. Hubbard, Superintendent.****WEATHER CONDITIONS.**

The winter was colder than the average, with spells of intense cold almost unprecedented: the average mean temperature for January, February, and March was 15.5 degrees against an average for the last forty years for these months of 18 degrees. There was, however, beginning on the 24th December a nice even blanket of snow; and frost did not penetrate as deeply as in more open winters. The snowfall was not above the average, on the whole. April was a cold and backward month with a below-zero record of -3.5 degrees on the 5th, cold high winds and with a precipitation of 4.54 inches, nearly twice the average for the month. May continued cold and windy with a minimum record on the 1st of 24 degrees, and frost on the 2nd, 5th, 7th, 8th, 12th, 18th and 29th. There were some warm days, the thermometer reaching 89 degrees on the 26th. There was only one-third of the normal precipitation that month and conditions were most favourable for cultivation. Vegetation was very backward, and cold, backward weather continued through June and up till the 22nd July, when a minimum temperature of 44 degrees was recorded. All crops consequently made slow growth till almost 1st August. The precipitation, though not quite up to the average, was ample for the Station land and for most soils in the province, and when continued warm weather came in August and September growth was most satisfactory and grain crops, where soil conditions were right, eventually were very good. The average mean temperature for August, September and October was 3 degrees higher than the average temperature for the last forty years. Harvest weather was ideal. Hay and grain being housed in splendid condition and fine weather continued into November, so that root crops as well as others were taken from the fields in the best possible condition.

On account of the prevalence of mustard in all the previously cultivated land on the Station and the fact that the land in process of clearing was not in sufficiently smooth or even condition, no cereal work was undertaken excepting to grow what grain could be grown for feeding purposes.

OATS.

Thirty-five acres of newly-cleared land was sown to oats. On account of the unevenness of the ground and the presence of small roots it was not possible to use the drill and the seed was therefore broadcasted.

The first oats were sown on the 23rd of May on land cleared and ploughed the preceding year. Banner oats, the seed of which was grown on the Station land last year, were used. There were 4½ acres in this piece and the yield was 220 bushels. No manure or fertilizer was applied.

On the 27th of May 4½ acres of land newly cleared and ploughed was sown to Newmarket oats. The yield was 200 bushels.

On the 28th, 29th and 30th of May, 25½ acres of land cleared and ploughed the preceding season, were sown to Newmarket, home-grown Banner, P. E. I. Banner, and Early Blossom oats, and the yield was 583 bushels.

All the land having only been ploughed once was very uneven in quality and for lack of cultivation did not afford by any means an ideal seed bed. On account of the very cold June and July weather the early growth of this crop was most disappointing and on the 1st August appearance would not indicate a yield of more than 12 bushels per acre. After August 1 portions of the field made splendid growth and the crop came up to an average of 22½ bushels per acre. The rate of seeding was 3 bushels per acre.

BUCKWHEAT.

Seven and one-half acres of buckwheat were sown on 27th of June upon land newly cleared and ploughed, at the rate of one bushel per acre; 220 pounds of 2-5-8 fertilizer per acre was sown with the seed. The yield from the 7½ acres was 136 bushels. At no time was the crop vigorous. The land was very rough and uneven.

EXPERIMENTAL FARM, HAPPAN, N.S.

W. W. Baird, B.S.A., Superintendent.

SEASONAL NOTES.

Grain-growers cannot be otherwise than pleased with the effect of the 1914 season on cereal crops in general. Although the spring growing period was somewhat unfavourable owing to the cold and damp weather, nevertheless the various grains made good growth when they once got started. The summer season was fairly dry and allowed the grain to ripen in good condition, and the weather during the harvesting period could not have been more auspicious.

Seeding was done during the few very fine days of the latter part of May. Weather conditions were so favourable just at this time that germination took place much more rapidly than last year, as the grain was only seven days in showing above the ground, whereas last year it was from eighteen to twenty days; and although the grain was some fifteen days later being sown this year, it was more advanced by the first week in June than it was the previous year, due to favourable weather conditions.

The first part of June was very cold and frequent rains were recorded. The weather became more favourable toward the latter part, however. July and August were good growing months with only occasional showers and cool weather. September opened with cool, wet weather, but several exceptionally fine days occurred during the middle of the month and presented ideal conditions for harvesting. All grains were stored in excellent condition and very satisfactory yields were recorded.

This year all the principal cereals were tested in duplicate plots of one-sixtieth acre.

SPRING WHEAT.

Eleven varieties of wheat were grown. The seed was sown on May 21 at the rate of 1 bushel and 3 pecks per acre. The land was a medium heavy clay loam, and was thoroughly cultivated to insure a perfect seed bed. The plots were fairly free from lodging, smut and rust.

The highest yield obtained this year was from White Fife—44 bushels 15 lbs. per acre. Marquis was second with a yield of 42 bushels 15 lbs. per acre. The average yield from all the wheat plots was 36 bushels 5 lbs. per acre.

The following varieties can be particularly recommended for this and surrounding districts: Marquis, Red Fife, Huron (bearded) and Stanley.

BARLEY.

Twelve varieties of barley were tested, six of six-rowed and six of two-rowed. The land was a medium to heavy clay loam, and was well prepared. The grain was sown on May 22 at the rate of 2 bushels per acre. All the barley plots were very free from noxious weeds, insect pests and lodging.

The highest yield obtained was from Swedish Chevalier, which gave over 65 bushels per acre. French Chevalier and Gold gave 58 bushels. These three varieties are of the two-rowed type. Among the six-rowed varieties Nugent gave the highest yield, 56 bushels, and Manchurian came next with 54 bushels.

The varieties recommended are: (two-rowed) Swedish Chevalier, French Chevalier and Invincible. (Six-rowed) Manchurian and Odessa.

OATS.

Twelve varieties of oats were tested on a medium to heavy clay loam, in a good state of cultivation. The seed was sown on May 31 at the rate of 3 bushels per acre. There was a good deal of smut in the oat plots, but nevertheless exceedingly good yields were secured.

The highest yields were from the following varieties: Victory, 90 bushels 24 lbs.; Gold Rain, 93 bushels 13 lbs.; Swedish Select, 91 bushels 36 lbs., and Banner, 90 bushels 30 lbs. The average yield of all the varieties was 88 bushels 15 lbs., per acre. Daubeney was the earliest oat to ripen, maturing in 97 days. Victory required 118 days.

Among the best of the well-tried varieties may be mentioned: Banner, Ligowo, Abundance and Swedish Select.

BUCKWHEAT.

Owing to a lack of land the buckwheat plots were not sown in duplicate. Five varieties were sown on plots of one-fortieth acre each. The land was a clay loam in a fair state of fertility. The best yield obtained was from Silver Hull, which gave 20 bushels 40 lbs. per acre. This variety, though not usually a very heavy yielder, is considered the best for flour, and many farmers use it for poultry in preference to the other sorts.

FIELD CROPS OF SEED GRAIN.

About 12 acres were sown to wheat, oats and barley. All seed thus grown will be hand-picked and thoroughly cleaned during the winter and will be for sale in small quantities of from 2 to 3 bushels to each farmer at reasonable prices. Great care is taken to insure good seed of high quality and true to type. The following table gives the results obtained from the fields:—

No. of Acres.	Variety.	Date of Seeding.	Date of Ripening.	Total Yield.		Yield per Acre.	
				Bush.	Lbs.	Bush.	Lbs.
11....	Wheat—Red Fife.....	May 22....	Sept. 21. .	53	—	35	5
11....	—Huron (bearded)	" 22....	" 16....	41	30	27	40
3....	Oats—Ligowo.....	" 22....	" 10....	158	20	52	29
2....	—Abundance.....	" 23....	" 13....	137	22	68	28
2....	—Banner.....	" 23....	" 13....	142	—	71	—
1....	Barley—Manchurian.....	June 3....	" 17....	53	17	53	17
1....	—Fr. Chevalier.....	" 3....	" 17....	54	28	54	28

With our plot grain, taking last year as a standard, and counting it as 100, this year's crops figured on a percentage basis stand at 118.3.

EXPERIMENTAL STATION, KENAVILLE, N.S.

W. S. Blair, Superintendent.

April was cold and backward. The rainfall during May was light. Cool, cloudy days, however, with no warm drying winds during the first half of May kept the land wet, and, except on very dry places, land was not fit to work until the 16th. From this date to the end of the month the weather was fine and dry for seeding. The first seeding was done on the 20th. The temperature during June was slightly below normal. There was a light frost on June 4, which was much more severe at other points in the valley than at this station, however, no injury to grain was reported. Early-seeded

barley showed a slight yellowing evidently due to low temperature but it recovered toward the latter part of June. Precipitation was ample, 4.2 inches of rain having fallen during the month. July was also cool being about 1 degree lower than the average mean. The month was exceedingly dry at this station only 1.45 inches of rain having fallen. There was much more rain in other parts of the province however during this period. The sunshine was not as great as usual, and this with the relatively cool weather offset the shortage in rain somewhat so that cereal crops made good growth. August was a favourable month with well distributed showers making a total rainfall of 2.58 inches. The mean temperature was about 1 degree below the average. During the first week of September we had frequent heavy showers which made it difficult to properly dry the grain which was cut at this time. After this, however, the harvest weather for late grain was fine.

The season throughout favoured cereal crops. The growth of straw was good and generally was secured in good condition.

LAND FOR GRAIN PLOTS.

The land for cereal work was in forest growth in 1910, the wood being cut in 1911. The ground was cleared of stumps in the fall of 1912 and early spring of 1913. This land could not be got ready early in 1913, and it was thought desirable to seed to oats with the intention of cutting green for feed. The fall of 1913 however was favourable and the growth good, with the result that the grain ripened fairly well. No fertilizer was put on this land in 1913 but this season a fertilizer composed of nitrate of soda, acid phosphate and muriate of potash containing 4 per cent nitrogen, 8 per cent phosphorus and 5 per cent potash was sown broadcast at the rate of 400 pounds per acre before seeding the plots.

GRAIN PLOTS.

A small start was made in 1913 with selected seed supplied by the Cereal Division, Ottawa. This grain was saved and half an acre each of Red Fife and Marquis wheat, Manchurian and Canadian Thorpe barley, and one acre each of Banner and Daubeney oats were seeded in 1914. The land on which this grain was sown was as stated above. The seed was sown on May 20 with a disc drill and the ground seeded to clover and timothy at the same time. The yield per acre and other data secured from these areas are as follows:—

Variety.	When Cut.	Length of Straw.	Yield per Acre.	
		Inches.	Bush	Lbs.
Manchurian Barley	Aug. 21	32	24	12
Canadian Thorpe Barley	" 24	34	22	8
Daubeney Oats	" 19	40	52	26
Banner Oats	" 29	46	58	9
Marquis Wheat	" 29	41	26	15
Red Fife Wheat	Sept. 4	42	26	6

WINTER RYE.

A piece of ground was seeded to winter rye September 12, 1913. The land was in grain in 1913 and was cleared from stumps in 1911 and 1912. Ten tons of manure were spread on the land in the fall of 1913, after which it was ploughed, well worked down and seeded. The crop was harvested August 7, and yielded 23 bushels per acre. The growth of straw was 54 inches.

EXPERIMENTAL STATION, STE. ANNE DE LA POCAIERE, QUE.**Joseph Begin, Superintendent.**

It has been impossible, thus far, to start a regular series of experimental plots of cereals, but the purchase and preparation of additional land will make it possible to undertake such experiments on a suitable scale in the near future. It is proposed to have a series of test plots of wheat, oats, barley, peas, etc., and also to grow a few of the best varieties in a larger way.

This season seven of the most promising kinds of grain for this district were tested on somewhat irregular pieces of land. The following table gives the results of the tests. All the varieties were sown on June 2, fifteen pounds of seed being used in each case.

Name of Variety.	Date of Ripening.	No. of Days Maturing.	Average Length of Straw, including head.	Average Length of Head.	Yield of Grain.
			Inches.	Inches.	Lbs.
Huron wheat.....	Sept. 14	101	34	3	232
Marquis wheat.....	" 12	103	33	3	201
Ligowo oats.....	" 10	100	31	6	170
Dauboney oats.....	" 8	98	30	6	145
Manchurian barley.....	Aug. 26	86	28	3.2	200
Succow (beardless) barley.....	" 20	79	25	3.1	248
Arthur peas.....	Sept. 10	100	34	3	276

In order to determine the action and value of "Farmogerm" (nitrogen gathering bacteria), one-half of the plot of Arthur peas was sown with seed which had been treated with this substance. The other half was sown with untreated seed. Unfortunately no definite conclusions can be drawn from the experiment, as the lower portion of the plot where the treated seed was sown was on a steep slope and was considerably damaged by water. There appeared, however, to be some advantage from the treatment of the seed.

EXPERIMENTAL STATION FOR CENTRAL QUEBEC, CAP ROUGE, QUE.**Gus. Langelier, Superintendent.****THE SEASON.**

The spring of 1914 was an average one for earliness, and all the grain was sown on the trial plots by May 10. From that date until the end of the month, there was just enough precipitation to insure good germination. Though June did not furnish enough moisture for the best development of plants, the rains of the 25th, 29th and 30th favoured vegetation. A drought, which lasted all through July and until August 11, cut down the yield somewhat. However, from the latter date until harvest, the rainfall was ample to bring a change for the better, and a fair crop was harvested.

VARIETY TESTS OF CEREALS.

The trial plots of cereals come in a regular rotation of hoed crops, grain and clover. Manure, at the rate of twenty tons to the acre, is always applied on the crop preceding the cereals. The ground chosen for the variety tests though not very fertile is fairly uniform, which is a matter of much more importance. It is a sandy loam with a subsoil of shale at about eighteen inches. This piece of land was ploughed in

October, 1913; during the spring of 1914 it was double-discd twice, harrowed, rolled and sown. The plots were kept free of weeds and rogued. The grain, which showed no sign of fungous diseases, was cut by hand, threshed with a special machine and cleaned with the fanning mill. Each variety was grown in triplicate, a plan which eliminates a great number of errors due to irregularities of soil and which also has the advantage of giving a greater number of trials each year to calculate averages from. None of the grain lodged.

SPRING WHEAT.

Four varieties were tested: Early Red Fife, Huron, Marquis, and Red Fife. The average yield was 902 lbs. per acre, and the average number of days required to come to maturity was 98. Huron was the highest yielder with 1,240 lbs. per acre, and took 99 days to come to maturity. Marquis was the first ready to cut, 96 days after it was sown, and yielded 480 lbs. per acre. The average, for four years, places Huron at the head, with 1,585 lbs. per acre, and it is the variety which seems to do best in Central Quebec. The quantity of seed used per acre was $1\frac{1}{2}$ bushels.

OATS.

Six varieties were tested: Banner, Daubeney, Eighty Day, Gold Rain, Swedish Ligowo, and Victory. The average yield was 1,870 lbs. per acre, and the average number of days required to come to maturity was 77. Gold Rain was the highest yielder with 2,200 lbs. per acre, and took 85 days to come to maturity. Eighty Day was the first ready to cut, 78 days after it was sown, and yielded 1,600 lbs. per acre. The average, for four years, places Banner at the head, with 2,373 lbs. per acre, and it is the variety which is strongly recommended to farmers of this district. The quantity of seed used per acre was $2\frac{1}{2}$ bushels.

PEAS.

Four varieties were tested: Arthur Selected, English Grey, Golden Vine, and Prussian Blue. The average yield was 1,172 lbs. per acre, and the average number of days required to come to maturity was 93. Arthur Selected was the highest yielder with 1,200 lbs. per acre, and took 91 days to mature. Contrary to expectations, Golden Vine was the first ready to cut, maturing 89 days after it was sown, and yielding 1,180 lbs. per acre. The average, for four years, places Arthur Selected at the head, with 2,100 lbs. per acre, and it is the variety which seems best suited to our climate. The quantity of seed used per acre was $2\frac{1}{2}$ to $2\frac{3}{4}$ bushels, according to the size of the peas.

SIX-ROW BARLEY.

Barley did not give satisfactory results at this Station until this year, when it was found out that the addition of lime to the soil more than doubled the yield.

Only three varieties of the six-row type were tested: Manchurian, O.A.C. No. 21, and Success. The average yield was 643 lbs. per acre, and the average number of days to come to maturity was 81. Success was the highest yielder with 680 lbs. per acre, and it was the first ready to cut, in 77 days after sowing. The average, for four years, places Success at the head of the list, with 1,022 lbs., but as Manchurian comes a close second with 990 lbs. and has a better record on other farms, it is recommended to farmers of this district until another variety shows a decidedly higher yield.

GRAIN GROWN FOR SEED.

Every year, a certain quantity of grain is grown for seed, of the varieties which, according to results in the trial plots, seem best adapted to this district. In 1914, the following yields were obtained:—

Huron Wheat	1,805 lbs. or 30 bush.	5 lbs. per acre.
Arthur Selected Peas.	1,507 lbs. or 25 bush.	17 lbs. per acre.
Manchurian Barley	1,015 lbs. or 21 bush.	7 lbs. per acre.
Banner Oats.	2,150 lbs. or 63 bush.	8 lbs. per acre.

Part of the above is sent to Ottawa for distribution to farmers, and the remainder, in so far as it is not required for use on this farm, will be for sale at the following prices, on board cars Cap Rouge: Oats, \$1.00 per bushel of 34 lbs.; barley, \$1.50 per bushel of 48 lbs.; wheat, \$1.75 per bushel of 60 lbs.; peas, \$2.50 per bushel of 60 lbs.

EXPERIMENTAL FARM, BRANDON, MANITOBA.

W. C. McKillop, B.S.A., Superintendent.

THE SEASON.

The spring of 1914 was rather cold and backward, seeding was a little later than average and growth was slow at first. However, moisture was plentiful and when warmth did come, crops advanced rapidly. By July 1 prospects were excellent, but from that time on unfavourable conditions prevailed. Extreme heat, combined with winds and shortage of rain, made crops mature much too fast. As a result yields were from two-thirds to three-quarters of a normal crop.

SPRING WHEAT.

Four named varieties of wheat were tested this year. As usual, Marquis has given the best returns with a yield of 36 bushels 30 lbs. per acre as compared to 22 bushels 35 pounds of Red Fife per acre. The hot weather in July was especially hard on Red Fife and late ripening crops. The five-year average for these two varieties is 42 bushels 36 pounds for Marquis, and 37 bushels 23 pounds for Red Fife. The average number of days maturing is 105 for Marquis and 111½ for Red Fife. The other two varieties, Prelude and Pioneer, have no outstanding merits for this section of Manitoba, and as they are bearded, and easily shelled, they are not recommended. Eleven new varieties under numbers were also tried.

OATS.

Fifteen varieties of oats were tested in uniform duplicate plots. They were sown on summer-fallow land on May 9 at the rate of 2½ bushels per acre. The early varieties did best this year, as they were further advanced when the heat wave came and did not suffer so severely. Daubeney and Orloff are the two highest yielding varieties this year, but as they are usually rather low, the five-year average is considered to be a better guide. Banner is first on the five-year average with 95 bushels 33 pounds per acre. Twentieth Century is second with 93 bushels 16 pounds per acre. Gold Rain, Swedish Select and Victory are the next three and are only slightly below the leaders. We do not consider that any of the newer varieties have equalled Banner for general all-purpose use in Manitoba.

SIX-ROWED BARLEY.

Eight regular named varieties of six-rowed barley were tested this year, and in addition six new sorts under numbers were tried out. Manchurian, Dr. Saunders' selection of the old standard variety Mensury, has given the best returns this year, 56 bushels 37 pounds per acre. Garton's No. 68 and O. A. C. No. 21 have also given good results. These three varieties are recommended for Manitoba.

TWO-ROWED BARLEY.

Five varieties of two-rowed barley were tested this year. Two-rowed barley is not as well suited to Manitoba as is six-rowed, as it is lighter yielding and later. Gold, a new variety from Sweden, gave the best returns last year. The best five-year average is that of Canadian Thorpe.

PEAS.

Nine varieties of peas were tested this year. Paragon is the highest yielding variety this year, and Mackay the highest on the five year average. Arthur is the earliest variety, and at the same time yields well. For these reasons it is recommended.

FLAX.

Seven varieties of flax were tested this year. Three new varieties obtained from the North Dakota Agricultural College, N. D. R. No. 52, N. D. R. No. 114 and N. D. R. No. 73 have given the best results both in earliness and in productiveness. They are recommended as of outstanding merit. Golden, a variety much talked of in the West now, was tried for the first time. It was a distinct disappointment, being light in yield, very short and late.

EXPERIMENTAL FARM, INDIAN HEAD, SASKATCHEWAN.

T. J. Harrison, B.S.A., Superintendent.

WEATHER CONDITIONS.

In southern Saskatchewan the season of 1914 was not very favourable for the production of cereal crops. On the whole the season was too hot and dry, causing a very short growth of straw and premature ripening of the grain. On the Indian Head Experimental Farm wheat seeding started on April 15. The land was in a good state of tilth and a few scattered showers caused the early sown wheat on summer-fallow to germinate quickly. After May 9 no rain fell until June 18, and as most of the oats and barley were sown between these dates the germination was uneven. The few showers in the latter part of June caused a considerable second growth especially in the oat crop. July was very hot and dry and the grain ripened too quickly, causing the kernel to be lean and light. The Prelude wheat and some of the earlier sorts of oats and barley were harvested the latter part of July and first part of August. On the night of August 9 the temperature dropped three degrees below freezing. This damaged the wheat to a great extent, lowering the quality from one to three grades. In the later maturing sorts the grain was so shrivelled that the yield was much lighter than it would otherwise have been. The weather in August and September was very dry and harvest and threshing were completed one month earlier than the previous season.

SPRING WHEAT.

At Indian Head spring wheat is sown as soon as the frost is out of the ground a sufficient depth to allow of good cultivation. This season this occurred about April 12, and wheat seeding started on the 15th.

The quantity of seed sown per acre depends largely on the viability. When the seed gives a germination test of 80 per cent or over one and one-half bushels per acre are sown. If the test is below this a comparatively larger amount is put on. As a prevention against smut the seed is all treated with a formaldehyde solution. It is made up by putting one pound of 40 per cent formaldehyde to 35 gallons of water. The seed is sprinkled by running it through a grain pickler.

The different varieties are always sown on a field in which the soil is very uniform. To prevent mixing they are all sown on summer-fallow. Of the four named varieties of wheat tested this year the Marquis again yielded highest. The Red Fife was very light because it was quite immature when the frost came. The Prelude again matured earliest taking 23 days less than Red Fife. The table below gives the results of this year.

Variety.	Days Maturing.	Yield.
Marquis.....	116	Bu. Lbs. 84
Red Fife.....	122	46-40
Pioneer.....	113	46-40
Prelude.....	99	31-40

WINTER WHEAT.

A small plot of winter wheat was sown on September 6, 1913, and was ripe on August 3, 1914. The yield per acre, however, was very unsatisfactory because a large portion of it winter killed.

WINTER RYE.

The winter rye was sown on September 5, 1913, and was ripe on July 25, 1914. Where this crop was sown on summer-fallow a good yield was obtained but the portion sown on stubble land was very poor.

OATS.

The young oat plants are much more tender than spring wheat and are, therefore, very easily destroyed by the spring frost. For this reason oats are never sown at Indian Head until after the danger of severe frost is past. This season the variety plots were sown on May 11. With oats the quantity of seed per acre depends on the vitality of the seed and the type of the oat. Oats of a large stooling type that test 80 per cent or over are sown two bushels per acre, while oats that test less or are poorer stooling types are sown heavier.

While smut does not affect the quality of oats as it does wheat it causes a lighter yield. Therefore, at this station the seed is always treated with formaldehyde, similarly to wheat.

The soil on which the plots were sown this year was a clay loam and was summer-fallow the previous season. Of the 16 varieties that were tested, the table below gives the results this year with the most promising sorts.

Variety.	Days Maturing.	Yield.
Victory.....	89	Bu. Lbs. 106-28
Gold Rain.....	89	104-12
Banner.....	89	103-2

BARLEY.

Barley is sown in the spring when danger of severe frost is past. This season the variety plots were sown on May 11. The rate of seeding again depends on the vitality of the seed. When it tests up to standard a bushel and a half is sown per acre.

Before seeding the seed is treated with formaldehyde similarly to wheat. This year four hulless sorts failed to germinate. The only reason that can be assigned for

this was that the formaldehyde solution was too strong for them. So where this type of barley is used it would seem, from this year's experience, that a solution weaker than one pound of formalin to 35 gallons of water should be used. The test plots were sown on summer-fallowed land. The table below gives the results of this season with the most promising of the more common varieties.

Variety.	Type.	Days Maturing.	Yield.
O.A.C. No. 31	Six row	80	Bus. Lbs. 50 8
Oderbruch	"	86	53 16
Manchurian	"	88	41 32
Gold	Two-row	86	55
Canadian Thorpe	"	88	53-16

FLAX.

At the Indian Head Farm this year the flax plots were sown on May 21. Flax, like the cereals, should have the seed tested for germination before seeding. If the test is 80 per cent or over 40 pounds of seed are sown per acre. If the test is below this more seed must then be used. As flax wilt causes a greater loss with this crop than any other disease the seed should be treated with formaldehyde similarly to wheat. The plots this season were sown on summer-fallowed land, but even with the well-prepared soil the crop was very light. The highest yield was obtained from the Novelty, a new variety originated by Dr. Saunders, the Dominion Cerealists. In the table below are found some of the best sorts:—

Variety.	Days maturing.	Yield.
Novelty	97	Bus. Lbs. 12-48
Premost	96	16-40

PEAS.

Peas usually require a comparatively long period in which to mature. They are, therefore, sown as early in the spring as practicable. This year the plots were sown on May 1 and owing to the very dry weather they matured much earlier than in former years. The amount of seed sown per acre depends largely on the size of the pea. The small sorts such as the Golden Vine were sown about 2 bushels per acre, while the large sorts, like the Arthur, are sown 3 bushels. This season the plots were all sown on summer-fallow. The following is a list of the most promising sorts, and a statement of their yield this year:—

Variety.	Days maturing.	Yield.
Arthur	99	Bus. Lbs. 40-40
Golden Vine	98	28
Solo	97	26-40

Varieties recommended for Southern Saskatchewan:—

Wheat: Marquis.

Oats: Banner.

Barley: O.A.C. No. 21 and Manchurian.

Flax: Premost.

Peas: Arthur.

EXPERIMENTAL STATION, ROSTHERN, SASK.

Wm. A. Munro, B.A., B.S.A., Superintendent.

THE SEASON.

The season of 1914 opened rather slowly, alternate cold and warm spells of several days occurring from the middle of March. Seeding began on April 23, and the work was continued under favourable auspices. Occasional showers kept the crops growing and in thriving condition until early in July, but from then on, those on sandy or ill-prepared land suffered from lack of moisture. The rainfall in July of this year was the lowest for the same month since the records of this Station began.

Following is the precipitation record in inches for the past four growing seasons from April 1 to August 15:—

Month.	1911.	1912.	1913.	1914.
April.....	0.86	0.67	0.26	0.63
May.....	2.38	2.15	1.26	1.96
June.....	3.75	2.81	1.87	2.00
July.....	2.89	5.25	3.80	1.40
August 15.....	0.43	0.23	2.34	0.13
Totals.....	10.11	11.11	9.43	6.12

The yield of all grain was below the average this year. Considering the relative conditions, the yield of wheat on corn ground is higher than that on fallow, and the yield of oats on wheat ground following corn is higher than that on wheat ground following fallow.

SPRING WHEAT.

Following are the yields per acre of the principal varieties of wheat on one-fortieth acre plots, sown on April 23, 1914, and compared with the yields of 1911, 1912, 1913:—

Variety.	Days maturing.	Yield 1911.	Yield 1912.	Yield 1913.	Yield 1914.	Average 4 years.
		Bus. Lbs.	Bus. Lbs.	Bus. Lbs.	Bus. Lbs.	Bus. Lbs.
Marquis.....	103	70 —	43 20	54 —	45 20	53 10
Huron.....	103	73 20	40 40	45 20	45 40	51 15
Early Red Fife.....	105	60 —	27 20	36 —	43 10	41 38
Prelude.....	91	— —	— —	24 —	31 20	—

The average yield of Marquis wheat on eight acres of fallow in 1914 was 30 bushels 35 pounds, and the average for three years under the same conditions is 32 bushels 4 pounds.

The average on six acres of fall ploughed stubble land in 1914 was 16 bushels 6 pounds, and the average for three years is 20 bushels 14 pounds.

The average on two acres of corn stubble, following fallow in 1913, was 33 bushels 17 pounds, and the average for three years is 44 bushels 53 pounds.

It is remarkable that the yield is higher, and the maturity earlier on corn ground than on fallow.

One acre of Prelude wheat sown on May 13 and harvested on August 9 yielded 23 bushels 55 pounds. The wheat was of No. 1 Northern quality and it matured in 87 days.

OATS.

The order of merit of oats in point of yield was somewhat changed in 1914 from that of the average for four years. Following are the yields of five of the leading varieties. The plots of 1914 were sown May 2:—

Variety.	Days maturing.	Yield 1911.	Yield 1912.	Yield 1913.	Yield 1914.	Average 4 years.
		Bus. Lbs.	Bus. Lbs.	Bus. Lbs.	Bus. Lbs.	Bus. Lbs.
Abundance.....	94	125-30	94-4	132-32	77-22	107-22
Banner.....	94	131-26	70-20	145-30	73-18	106-15
Victory.....	92	109-14	83-18	143-18	82-32	104-29
Ligowo.....	94	121-6	69-14	106-8	80-3	94-25
Eighty Day.....	82		63-18	102-12	75-20	

O.A.C. 72, a new variety of oats originated by Prof. Zavitz, of the Agricultural College at Guelph and promising well in Ontario, was tried at this station for the first time this year. The yield was higher than that of any of the other varieties under test, but was the latest of all in maturing, and we should therefore hesitate to recommend it for Northern Saskatchewan without further tests.

The average yield of Banner oats on fall ploughed stubble land was 50 bushels 2 pounds, and the average for three years was 64 bushels 27 pounds.

BARLEY.

Seventeen varieties were tested on one-fortieth acre plots. The results of six of the leading varieties, sown on May 2, 1914 (and compared with the years 1911-1912-1913), are here given:—

Variety.	Days maturing.	Yield 1911.	Yield 1912.	Yield 1913.	Yield 1914.	Average yield 4 years.
		Bus. Lbs.	Bus. Lbs.	Bus. Lbs.	Bus. Lbs.	Bus. Lbs.
* O.A.C. 21.....	94	94-8	57-4	73-16	78-16	75-35
* Manchurian.....	94	96-32	55-40		67-24	
* Swans Neck.....	92	73-16	66-32	74-8	77-4	74-3
* Black Japan.....	94	53-16	70-40	58-16	66-40	72-16
Duck Bill.....	94	86-16	61-32	67-24	66-42	69-4
Beaver.....	94	70-40	36-16	46-32	45-20	50-15

* Six-rowed varieties.

Two acres of O.A.C. 21 on root ground yielded 37 bushels 35 lbs. per acre in 1914, and an average under similar conditions of 45 bushels 34 lbs. for three years.

PEAS

Ten varieties were under test in 1914, but owing to difficulties in harvesting and threshing, the yields are not to be relied upon. Black-eyed Marrowfat, Prussian Blue, Paragon and White Marrowfat are all good yielders, but the most satisfactory is the Arthur Select. It is nearly as high a yielder as any, and is much earlier in maturing.

Varieties Recommended for Northern Saskatchewan.

Following are the varieties recommended for Northern Saskatchewan:

Wheat.....Marquis (Prelude where exceptional earliness is necessary).
Oats.....Banner, Abundance, and Ligowo.
Barley.....O.A.C. 31, Manchurian.
Peas.....Arthur Select.

EXPERIMENTAL STATION, SCOTT, SASK.

Milton J. Tinline, D.S.A., Acting Superintendent.

WEATHER.

The rainfall for the growing period was as follows: April, 1.36 inches; May, 1.15 inches; June, 2.37 inches; July, 1.80 inches; August (15th) .54 inches. Total, 7.22 inches.

The summer of 1914 will be recorded as the driest thus far in the history of this district. The total rainfall for the growing months was greater than for the corresponding period in 1913, but the hot dry winds of July and August sapped the moisture from the soil. The rainfall came in numerous small showers and the moisture seldom penetrated to the root zone of the suffering crops.

The hot dry winds at the time the grains were heading out, together with the dry condition of the soil, decreased the yields materially. Notwithstanding the low yields from the cereal test plots there is a marked similarity in the gradation of yields to the results obtained in previous years.

VARIETY TESTS WITH CEREALS.

All the tests were carried out on $\frac{1}{40}$ th acre uniform test plots. The soil is a dark chocolate clay loam and was summer-fallowed in 1913.

SPRING WHEAT.

Twelve varieties of spring wheat were sown on April 17, at the rate of $1\frac{1}{2}$ bushels of seed per acre.

Of the named varieties that have been under test here for three or more years, Marquis may be most highly recommended for general use in this district. While Red Fife has an almost equally high average yield, yet the earlier maturing Marquis has a considerable advantage in weight per bushel of the threshed grain. Huron, while a vigorous grower, is not as valuable commercially and is a bearded wheat.

OATS.

Eight varieties of oats were sown on May 8, at the rate of $2\frac{1}{2}$ bushels per acre.

The Banner oats have demonstrated their powers of withstanding adverse conditions by heading the list in yield per acre for this season. Owing to an error, the Victory, which has given very good results in previous years, was not sown in the plots this year. The Ligowo has given the best average yield for the past three years.

BARLEY.

Four varieties of six-row and three varieties of two-row were sown on May 1 at the rate of 2 bushels per acre.

The Black Japan has given the best yields of the six-row varieties this season, but its dark grain and coarse straw will probably prevent this variety becoming popular. The O. A. C. No. 21 has given the best results in the three year averages and is a satisfactory variety for general use. The Manchurian is also to be recommended.

Of the two-rowed varieties Duckbill and Brower have yielded very well for such a dry season. Duckbill has been under test for three years and has proven more productive than any of the six-row sorts.

PEAS.

Four varieties of peas were sown on May 1 at the rate of 2½ bushels per acre. They were harvested on August 13.

Chancellor has given the best returns for this season while Arthur has the highest average for three years. The latter is usually early with a fair length of vine and is to be recommended for this district.

SPRING RYE.

One plot of Ottawa Selected spring rye was sown on April 17 at the rate of 1½ bushels per acre. The crop was harvested August 6 and yielded 18 bushels and 32 pounds per acre.

FLAX.

Several plots of common flax were sown at different dates. The best returns were from the plot sown on May 15. This was harvested August 29 and yielded at the rate of six bushels and 24 pounds per acre.

EXPERIMENTAL STATION, LETHBRIDGE, ALBERTA.

W. H. Fairfield, M.S., Superintendent.

SEASONAL NOTES.

On account of the excessive drought the season of 1914 has been, with the possible exception of 1910, when the area affected was more restricted, the most trying that has been experienced in Southern Alberta, since settlement has taken place. In regard to the amount of moisture carried in the soil from 1913 it might be said that the precipitation during the last four months of the year was light, amounting in all to only two and one-half inches. During this period heavy drying winds were prevalent with little or no snow on the ground so that the soil moisture was severely drawn upon. To counteract this in a measure, however, 3.63 inches of precipitation was received during the first three months of this year, so that the soil was reasonably moist and in excellent condition when work on the land was started.

The first discing, harrowing, or seeding on the Station occurred March 17. The ground froze up toward the latter part of March but opened up again shortly, and seeding became general from April 4. Unfortunately the rainfall during April, May, and until the latter part of June was very much less than usual. For this entire period no soaking rain was experienced, what did come was in the form of light showers that were not sufficient to wet through the dry layer of two or three inches at the surface and connect with the moisture lower down. The fact that the total precipitation for April was only 0.5 of an inch and for May 0.3 of an inch fully illustrates how serious conditions were, and how difficult it was to obtain a stand from seeds when sown. A wet spell during the last ten days of June revived things generally, but the dry, hot July was too severe a strain on plant life and the result was that there was a failure of all grain crops except those on summer-fallow.

The last frost in the spring occurred on May 12 when a temperature of 29° was recorded. The first frost in the fall was on September 18, when the temperature dropped to 31°.

EXPERIMENTS WITHOUT IRRIGATION.

WINTER WHEAT.

Ten varieties were sown and came through the winter in good shape. Kansas Red and Dawson's Golden Chaff exceeded Kharkov this year in yield per acre by 2 bushels.

SPRING WHEAT.

Fourteen varieties were seeded April 6. The stand secured was thin, the straw of medium length, and maturing was hastened, making it difficult to secure data of value regarding the merits of the different varieties. Early Russian, yielding 25.5 bushels per acre, stood a little ahead of Marquis and Red Fife.

BARLEY.

Six-rowed:—Six varieties were tested. These were more adversely affected than the wheats. Odessa, which has proved the best for six years, was again considerably ahead in yield.

Two-rowed:—The two-rowed varieties did not yield as heavily as the six-rowed varieties. Gold, a new early maturing variety, proved better than any tested previously. Duckbill, a new variety on this farm, was affected with smut and came at the foot of the list.

PEAS.

Peas made only moderate yields. The straw and pods were short. Paragon, which has been ahead for six years, led in yield again this season by one bushel above any other variety. The smaller varieties, such as the Golden Vine and Chancellor, made a relatively better showing than usual.

OATS.

Oats did not do well. A few heads ripened on each plot early in the summer. The plots were left for the second growth to mature, consequently low yields resulted and no data of value were secured.

OTHER GRAINS.

One plot each of Winter rye, White spelt and Common emmer made a good showing.

Spring rye was thin and almost a failure. Golden flax and two varieties of buckwheat were frosted previous to maturity.

EXPERIMENTS WITH IRRIGATION.

SPRING WHEAT.

Prelude which matured in 106 days was seeded April 6th, and yielded 31.25 bushels per acre though some shelled on the ground. Marquis, Red Fife, and Pioneer all ripened a week later, their respective yields being 53.7, 47.7, and 42.7 bushels per acre.

BARLEY.

Six-rowed.—These varieties made a good showing. Claude was in the lead with a yield of 97.5 bushels per acre. Guymalaye, a hullless variety, came second with 75 bushels. This variety is well suited for use in a temporary pasture.

Two-rowed.—Swedish Chevalier, which, although somewhat weak in the straw, is usually the best two-rowed variety here, gave 95.5 bushels per acre. The new variety, Gold, came second with 87 bushels. Duckbill proved liable to smut attack and gave only 63.5 bushels.

OATS.

Cutworms did damage on the six plots tested, and no data of value could be secured.

PEAS.

Peas made a good showing. Prince and Paragon yielded 62 and 54 bushels per acre respectively. Solo, a new, short-strawed, early maturing variety, gave 56 bushels per acre. Ten varieties were tested.

BUCKWHEAT.

Silver Hull and Japanese buckwheat were frosted before they matured.

EXPERIMENTAL STATION FOR CENTRAL ALBERTA, LACOMBE, ALBERTA.

G. H. Hutton, B.S.A., Superintendent.

CHARACTER OF SEASON.

The seeding season at the Lacombe station opened about the middle of April with the land in good tilth. Seeding on plots commenced on April 15. The season of 1914 was ideal, plenty of moisture, heat and sunshine during the growing season to ensure maximum yields. All the varieties were seeded on black loam soil, which had previously grown a crop of roots. One-fortieth acre plots were used in all cases.

WHEAT.

Sixteen varieties of wheat were tested in the season of 1914. Several of these are new and are recorded under number only. Some of the numbered varieties show exceptional promise and compare very favourably with the older varieties, in quality and yield. One of them yielded as high as 73 bushels and 50 pounds per acre. Of the standard named varieties Early Russian, Huron and Bishop were the highest yielders, while Early Russian is the heaviest yielder this year, it is not a variety to be recommended for this district because of its weakness in straw. Prelude, although not one of the highest yielders, is a variety that should gain popularity, especially in those districts where the season is short, because of its early ripening quality. Prelude at this station ripened in 127 days and yielded 36 bushels and 40 pounds per acre.

BARLEY.

Fifteen varieties were tested in 1914. Several of these are new and under number only. However, it is sufficient to say that several of the numbered varieties compare well with the standard varieties. The six-rowed sorts outyielded the two-rowed sorts. Among six-rowed named varieties Mansfield and Odessa were the leading sorts, yielding as high as 80 bushels per acre. The highest yielding two-rowed varieties were Swedish Chevalier, Invincible and Gold. Swedish Chevalier ripened in 136 days and yielded 35 bushels per acre.

OATS.

Twelve varieties of oats were tested, being sown April 16. The leading varieties were, Banner, Danish Island and Irish Victor. These ripened in 137 days and yielded in each case over 100 bushels per acre, Banner topping the varieties with 116 bushels, and 16 pounds per acre. Daubeney and Eighty day are the two earliest varieties, ripening in about 126 days and yielding 68 bushels per acre.

PEAS.

Owing to an invasion of cut-worms in the early summer, the test plots of peas were totally destroyed. Several of the Barley plots suffered slightly from the invaders. However, with the application of Paris green and bran their attack was soon subdued.

SUB-STATIONS IN ALBERTA.

ST. BERNARD MISSION, GROUARD, ALBERTA.

R. J. Bro. Laurent, Experimentalist.

THE SEASON.

The summer and autumn of 1913 were wet that it was impossible to prepare the land in any way for the crops of until the 18th of April, when ploughing was commenced.

Seeding was finished early in May, and a few days of warm weather caused the grain to germinate quickly. During the latter half of May the young plants suffered somewhat from the violent winds which continued without intermission until the 3rd of June. On June 4 there came a heavy rainstorm, after which the growth of cereals was rapid. Barley began to head out at the end of that month. Wheat and oats were in head by July 15.

SPRING WHEAT.

Prelude yielded 25 pounds from 5 pounds of seed, and was ripe on August 20. The threshed wheat weighs 62 pounds to the measured bushel.

Early Red Fife, sown April 30, on stubble, was ripe August 18, and gave 27 bushels per acre.

Marquis, sown May 1, on stubble, was ripe August 26, and yielded 29.25 bushels per acre. Weight of a measured bushel, 59 pounds.

Preston, sown May 1, on stubble, was ripe August 26, and yielded 28 bushels per acre.

OATS.

Eighty Day, sown April 30, was ripe on August 1. The total yield, from 4 pounds of seed, was 45 pounds, and the weight per measured bushel was 27 pounds.

Abundance was ripe on August 16. Four pounds of seed yielded 40 pounds; and the weight per measured bushel was 35.3 pounds.

Banner, sown May 2, on stubble, was ripe on August 15, and yielded 45 bushels per acre.

BARLEY.

Manchurian barley sown on the 2nd of May was ripe on the 10th of August, and yielded at the rate of 40 bushels to the acre. Weight of a measured bushel 44.8 pounds.

EXPERIMENTAL STATION, FORT VERMILION, ALBERTA.

R. Jones, Manager.

THE SEASON.

April opened with rough weather, but turned fine towards the end of the month. Seeding commenced on the 30th. May was dry, with considerable wind. June was somewhat dry, but there was enough rain to cause a good growth of cereals. Further rains occurred early in July, but the month as a whole was dry and hot. August was quite warm and rather showery. Harvesting commenced on July 22.

SPRING WHEAT.

Nine varieties were tested in one-thirtieth acre plots, on land on which roots had been grown the previous year. The seed was sown on April 30 and May 1 at the rate of 12 bushels per acre.

The highest yield this year was given by Bishop, at the rate of 63 bushels to the acre. This variety ripened on August 12. Prelude, the earliest sort, was ripe on August 4, and yielded at the rate of 49 bushels to the acre.

OATS.

Five varieties were sown. The plots were one-thirtieth of an acre. The previous crop was corn. The seed was sown on May 2 and 4 at the rate of 2½ bushels to the acre.

This year the highest yields were obtained from two very coarse varieties, Excelsior (black) and Tartar King. The former yielded at the rate of 120 bushels to the acre. Ligowo and Banner also gave good yields.

BARLEY.

Four varieties of six-row barley and two of two-row were tested this year in one-thirtieth acre plots, on land on which potatoes had been grown the previous year. The barley was sown on the 6th and 7th of May. The first variety to ripen was Success (beardless). This was cut on July 28, but gave the smallest yield of all the kinds tested (51 bushels 12 pounds per acre). The two-row sorts surpassed the six-row this year in yield, Canadian Thorpe being at the head (62 bushels 24 pounds per acre).

PEAS.

Two varieties of peas were sown. Arthur gave good results. It was sown on May and harvested on August 10, and gave a crop at the rate of 45 bushels per acre.

BUCKWHEAT.

Two varieties of buckwheat were tested, Silverhull and Japanese. These were sown on May 21. The Japanese was quite green when frost occurred on September 7. The Silverhull was ready to cut on August 26, and yielded at the rate of 40 bushels per acre.

EXPERIMENTAL STATION, INVERMERE, B.C.

Geo. E. Parham, Superintendent.

Arrangements have been completed to commence variety tests of cereals at this station next season. A suitable piece of land has been set apart for this purpose.

Two principal series of tests will be carried on, in one of which a greater amount of water will be applied than in the other. These experiments will include varieties of wheat, oats, barley and peas.

EXPERIMENTAL FARM, AGASSIZ, B.C.

P. H. Moore, B.S.A., Superintendent.

WEATHER.

April this year had less than three inches of rain, but seeding was commenced about the same time as usual. The first seeding was done on April 18, and all plots were sown by the night of April 22. May was comparatively dry and bright; June was wet in the fore part, and a heavy shower occurred on the 27th. From this shower in June until the grain was cut in August, there was not enough rain to settle the dust. Below we give a table showing the precipitation, temperatures, etc., during the growing season.

1914.	April.	May.	June.	July.	August. 1-6.	Totals.
Precipitation.	2.94"	3.55"	5.18"	1.15"		11.82"
Sunshine	{ 143 hrs, 54 min.	202 hrs.	176 hrs., 18 min.	246 hrs., 54 min.	41 hrs., 18 min.	810 hrs., 24 min. } average.
Highest temperature.....	72°	85°	87°	87°	86°	82.2°
Lowest temperature.....	31°	36°	41°	39°	44°	38.2°
Mean monthly temp.....	51.55°	56.28°	52.91°	62.075°	77.16°	59.90°

Such a season gave very good results until the grain headed out, but from that time the ripening was too much hastened to secure the largest yields. However, the colour and quality of the straw and grain could not be surpassed, and both were much above the average for this valley.

LAND AND TREATMENT.

The cereal variety test plots, with the exception of peas, were put on a piece of sandy loam in the northeast section of the farm. This piece of land had for many years been under orchard. In 1911 it was spring ploughed, sown to oats, and seeded to clover. In 1912 it was pastured and fall ploughed; in 1913 it was dressed with 16 tons of barnyard manure and 600 pounds of chemical fertilizer per acre, and planted to mangels. In 1914 it was spring ploughed, harrowed, rolled and seed sown in plots, and the whole seeded down to clover.

The peas were sown on a piece of fall ploughed pasture land of sandy nature, which did not have an application of manure of any kind.

Smut did not make an appearance this year, but, as usual, all grains subject to it were given the formalin treatment.

SPRING WHEAT.

On account of the semi-failure of this crop for the past few years, caused by the wheat midge, the test plots were discontinued in an effort to try to starve out the insect; but it was found that the insect lived in sufficient numbers on the barley to perpetuate its species.

OATS.

Fifteen varieties of oats were tested. Owing to the very dry weather just when the oats were filling, the yields are lighter this year than usual. The highest yielder this year was Gold Rain, which gave 65 bushels per acre. It matured in 104 days, which is the usual length of time for the earlier varieties, such as Eighty Day and Daubeney. All varieties matured in an average of 104 days, which is 11 days earlier than last year's average. The Eighty Day was the earliest maturing and lightest cropping variety. It yielded only 31 bushels per acre, and matured in 96 days. The second highest yielder was a Danish variety, Gul-Nesgaard. This variety matured in 110 days, which was the longest growing period except that of Lincoln. The two varieties, Gold Rain and Gul-Nesgaard, took the leading positions this year, supplanting last year's leaders, Lincoln and Danish Island. The other varieties about held their respective positions with last year's results.

Four varieties were sown for hay but gave very light yields. The varieties used for this purpose were Swedish Select, Banner, Ligowo and Daubeney. They yielded according to the order named, which was a repetition of their performance last year.

BARLEY, TWO-ROWED.

Six varieties of two-rowed barley were tested this year, of which Danish Chevalier was the highest yielder. Beaver was the next highest, and both varieties took the longest period to mature, namely, 103 days.

BARLEY, SIX-ROWED.

Eight varieties of six-rowed barley were tested. This season most of the six-rowed varieties outyielded the two-rowed sorts. This is not always the case at this farm. The varieties Trooper and Odessa headed the list this season, each yielding 46 bushels per acre. All varieties of barley gave higher yields and better quality of seed than they did last year.

PEAS.

Nine varieties of peas were tested. They were sown on April 18 and matured between August 3 and August 10, a period varying from 107 to 114 days. The straw was shorter than usual this year, but the crop of grain was up to the average.

The highest yielder was Solo, giving 53 bushels (3,184 pounds) per acre; next in order of yield was Golden Vine with 50 bushels (3,000 pounds) per acre; and the third was Arthur Selected, yielding 47½ bushels (2,848 pounds) per acre. The lowest yielder this season was Chancellor, which produced 37 bushels (2,220 pounds) per acre.

One variety of vetch was grown. This was produced in Sweden and is called Improved Swedish Vetch. It made an excellent growth but the seed ripened unevenly and some was lost in harvesting. The yield was 10 bushels (1,140 pounds) per acre.

EXPERIMENTAL STATION, SIDNEY, B.C.

Samuel Spencer, Foreman Manager.

CEREALS.

Five varieties of winter wheat, three of winter rye, three of spring wheat, three of oats and two of barley were tested on plots of ½ of an acre each, the crops were the first grown on new land, some plots had been heavily graded and a very thin layer of soil left on the clay sub-soil. All the plots were sown on October 27, and were ripe, July 22.

FALL WHEAT AND FALL RYE—TEST OF VARIETIES.

No.	Variety.	Soil.	Weight of Straw per acre.	Yield of Grain per acre.	Weight of measured bus. after cleaning.
			Lbs.	Bush.	Lbs.
Fall Wheat.					
1	Tasmania Red	Black Loam	6842	46.5	63
2	Egyptian Amber	" "	7563	43	63.5
3	Buda Pesth	" "	6050	38.7	64
4	Dawson's Golden Chaff.....	" "	4350	30.5	63
5	Turkey Red	Thin black loam on clay sub-soil.	4620	30	63
Fall Rye.					
1	Mammoth White.....	Black Loam	7320	36.5	57
2	Dominion	" "	4006	32.5	60
3	Thousandfold	Thin black loam on clay sub-soil.	6820	28	60

SPRING WHEAT, OATS AND BARLEY—TEST OF VARIETIES.

No.	Variety.	Soil.	Date of Ripening.	Days Maturing.	Weight of Straw per acre.	Yield of Grain per acre.	Weight of measured bushel after cleaning.
					Lbs.	Bush.	Lbs.
Spring Wheat.							
1	Huron	Black Loam	Aug. 7...	101	3,750	35	61
2	Marquis	Thin black loam on clay sub-soil.	" 7	101	2,700	27.5	59
3	Red Fife	" "	" 7	101	3,200	27.5	58
Oats.							
1	Victory	Black Loam	July 29...	97	6,800	68	42
2	Banner	" "	Aug. 5...	99	6,710	66	42.2
3	Daubeney	" "	July 22 ..	85	6,710	60.7	42
Barley.							
1	Manchurian (6 rowed)	Black Loam	July 22 ..	85		30	50
2	Canadian Thorpe (2 rowed).	Thin black loam on clay sub-soil.	" 30 ..	93		23.7	53